

REMARKS

The Examiner rejected claims 18, 19, 23, 24, 30, 48, 49, 53, 54, and 60 under 35 U.S.C. §102(c) as allegedly being anticipated by U.S. Patent No. 6,248,645 to Matsuoka et al. et al.

The Examiner rejected claims 21, 22, 51 and 52 under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuoka et al. et al.

The Examiner rejected claims 20 and 50 under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuoka et al. et al. in view of U.S. Patent No. 5,861,330 to Baker et al.

The Examiner rejected claims 25-28 and 55-58 under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuoka et al. et al. in view of U.S. Patent No. 6,342,429 to Puchner et al.

The Examiner rejected claims 29 and 59 under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuoka et al. et al. in view of U.S. Patent No. 6,069,057 to Wu.

Applicants respectfully traverse the §102 and §103 rejections with the following arguments.

35 U.S.C. §102

As for claims 18 and 48, the Examiner stated "Matsuoka et al. discloses a semiconductor device comprising: a P or N doped substrate (21) having a top surface (see column 3, lines 35-40; column 6, lines 45-60); a STI (30) having a bottom and first and second sidewalls (figures 2A-2F); a leakage stop implant (28) in the substrate under the STI and aligned to the second sidewall (figure 2C; implant uses sidewalls as a mask, thus causing the implant to be aligned to the sidewalls); and an N-well (or P-well for the N-substrate; 32a and b) adjacent to and in contact with the first sidewall, the n-well extending under the STI and forming an upper portion of an isolation junction with the leakage stop implant, the junction entirely under the STI (figures 2A-2F).

Applicants respectfully contend that Matsuoka et al. does not anticipate claims 18 and 48, as amended, because Matsuoka et al. does not teach each and every feature of claims 18 and 48. For example, Matsuoka et al. does not teach "a P-type (for claim 18 or N-type for claim 48) leakage stop implant in said substrate under the bottom of said STI, all of said P-type (for claim 18 or N-type for claim 48) leakage stop implant aligned between said second sidewall and an axis equally spaced between said first and second sidewalls." Applicants point out that punch through suppression region (28) of Matsuoka et al, is centered between the first and second sidewalls (Matsuoka et al figures 2A-2F).

Based on the preceding arguments, Applicants respectfully maintain that Matsuoka et al. does not anticipate claims 18 and 48, and that claims 18 and 48 are in condition for allowance. Since claims 19-30 and 61 depend from claim 18 and claims 49-60 and 62 depend from claim 48, Applicants contend that claims 49-60 and 62 are likewise in condition for allowance.

35 U.S.C. §103

As for claims 20 and 50, the Examiner stated "Matsuoka discloses that the leakage stop implant extends under the trench from the second sidewall toward the first sidewall a distance less than the width of the trench (figures 2C, 5C, 5D)." Applicants respectfully contend claims 20 and 50 are not obvious in view of Matsuoka et al. in view of Baker et al, because Matsuoka et al. in view of Baker et al. does not teach each or suggest and every feature of claims 20 and 50. For example, Matsuoka et al. does not teach or suggest "wherein said leakage stop implant extends under said STI from said second sidewall toward said first sidewall a distance equal to 10 to 40% of the width of said STI." First, Applicants point out that the "leakage stop implants" of Baker et al. are of the same polarity as the well which overlaps them (2302 and 2402 are both N-type), whereas Applicants claims 20 and 50 must be read in light of the claims they depend from (e.g. 18 and 48) which teach the leakage stop implants and well are of opposite polarity. Second, the "leakage stop implant" of Baker et al. extend under the STI from the first not the second sidewall as Applicants claims 20 and 50 require.

Based on the preceding arguments, Applicants respectfully maintain that claims 18 and 48 are not obvious in view of Matsuoka et al. in view of Baker et al., and that claims 20 and 50 are in condition for allowance.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact the Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0456.

Respectfully submitted,
FOR: Logan et al.

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